Exhibit 11

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC.

Petitioner

v.

XR COMMUNICATIONS, LLC D/B/A VIVATO TECH.

Patent Owner.

IPR2022-00958

U.S. Patent No. 8,289,939

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 8,289,939

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1004	CV of Dr. Jeffay
1005	U.S. Patent No. 7,158,501 to Kasami, et al
1006	Gast, Matthew, 802.11 Wireless Networks: The Definitive Guide (Apr. 2002)
1007	A.U. Bhode and P.L Perini, "An overview of smart antenna technology for wireless communication," in Proc. IEEE Aerosp. Conf., Mar. 2001, vol. 2, pp. 875-883
1008	J. Litva, *Digital Beamforming in Wireless Communications*, Artech House (1996)("Litva")
1009	P. Lehne & M. Petterson, "An overview of smart antenna technology for mobile communications systems", IEEE Communications Surveys, Fourth Quarter 1999, Vol. 2, No. 4 ("Lehne")
1010	Excerpts from G. Held, *Data Over Wireless Networks*, McGraw-Hill (2001)
1011	U.S. Patent No. 5,515,378 to Roy, III, *et al*
1012	B. O'Hara & A. Petrick, *IEEE 802.11 Handbook: A Designer's Companion*, IEEE Press (1999)
1013	Order Adopting Special Master's Report and Recommendations Re: Claim Construction, *XR Communications, LLC v. D-Link Systems, Inc., et al*, 17-00596-DOC-JDE (CD CA) (April 18, 2022)
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I. Introduction

Cisco Systems, Inc. ("Petitioner") petitions for *inter partes* review ("IPR") of claims 15-22 and 30-35 of U.S. Pat. No. 8,289,939 ("the '939 Patent," CISCO-1001). The '939 patent "relates in general to the coordination of signals being communicated across one or more media." (CISCO-1001, 1:27-28.) The allegedly novel feature of the '939 patent and its claims is the ability for a network-based wireless apparatus (e.g., a base station or access point) to restrict transmission of signals during a period of reception. This basic concept was well-known in wireless communication systems with shared resources before the priority date of the '939 patent.

Petitioner, supported by the declaration of Dr. Kevin Jeffay, having over four decades of experience in wired and wireless computing systems and networks, demonstrates that the challenged claims are unpatentable.

II. Grounds For Standing

Petitioner certifies that the '939 Patent is available for IPR and that the Petitioner is not barred or estopped from requesting IPR challenging claims on the grounds identified herein.

III. Identification Of Challenge

The '939 Patent was filed on November 3, 2003 and claims priority to Provisional Application Nos. 60/423,702 and 60/423,696, both filed on November

4, 2002[1]. The petition applies the following reference, which was filed before November 4, 2002:

> **U.S. Patent No. 7,158,501 to Kasami** ("Kasami"), filed on May 29, 2002, is prior art under at least pre-AIA 35 U.S.C. §102(e).

The petition presents the following ground of unpatentability:

> **Ground 1:** Claims 15-22 and 30-35 would have been obvious over Kasami.

IV. The '939 Patent

A. Overview of the '939 Patent

In the Background, the '939 patent describes drawbacks to omni-directional wireless LANs, including that "transmission range is limited, electromagnetic interference is unmanaged, network congestion may grow ungoverned, and the likelihood of packet collisions is unbounded." (CISCO-1001, 1:63-2:1.) The patent further argues that "inefficiencies may multiply unchecked if two or more centralized points of emanation happen to be positioned so as to have overlapping coverage areas or are otherwise sufficiently proximate to one another." (CISCO-

[1] Petitioner does not agree that the '939 patent is entitled to priority to either provisional.

1001, 2:1-5.)

The wireless LAN/WAN communication environment 200 of the '939 patent, illustrated in Figure 2, includes an access station 102 "coupled to an Ethernet backbone." (CISCO-1001, 4:12-13.) The access station includes a wireless I/O unit 206 having an antenna array 208 "implemented as two or more antennas, and optionally a phased array of antennas." (CISCO-1001, 4:17-20.) Multiple communication beams 202(1), 202(2) … 202(N) "may be produced by wireless I/O unit 206" using a beamformer along with antenna array 208. (CISCO-1001, 4:44-46.)

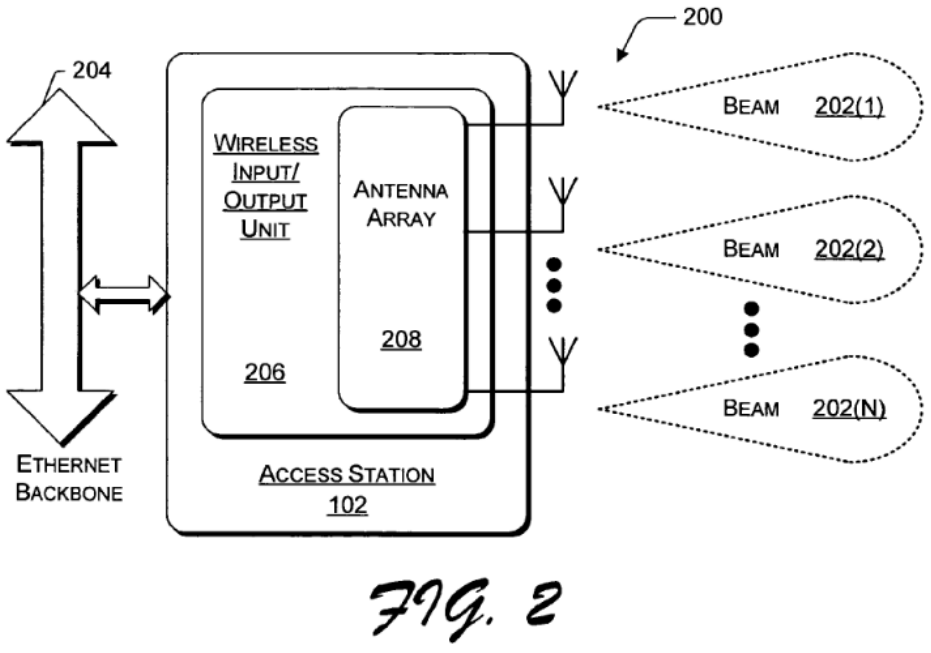


FIG. 2

'939 Patent, Figure 2

Figure 4, reproduced below, "illustrates an exemplary access station 102 that establishes multiple access points 402 and includes signal transmission/reception coordination logic 404." (CISCO-1001, 5:30-32.) Wireless I/O unit 206 "establishes two or more access points 402, such as multiple access points 402(1), 402(2) . . . 402(N)." (CISCO-1001, 5:38-40.) The "wireless coverage area or region for each respective access point 402 of the multiple access points 402 may correspond to, for example, a respective communication beam 202 of multiple communication beams 202 (as shown in FIGS. 2 and 3)." (CISCO-1001, 5:43-47.) However, "[a]lthough communication signals directed into (or obtained from) different access points 402 may be targeted at particular/specific coverage areas, bleedover between access points 402 can occur." (CISCO-1001, 5:48-51.) To address this concern, "signal transmission/reception coordination logic 404 coordinates uplink signal receptions and downlink signal transmissions across different access points 402 so as to avoid or at least reduce the frequency at which downlink signals are transmitted at a first access point 402(y) while uplink signals are being received at a second access point 402(*x*)." (CISCO-1001, 5:59-64.)

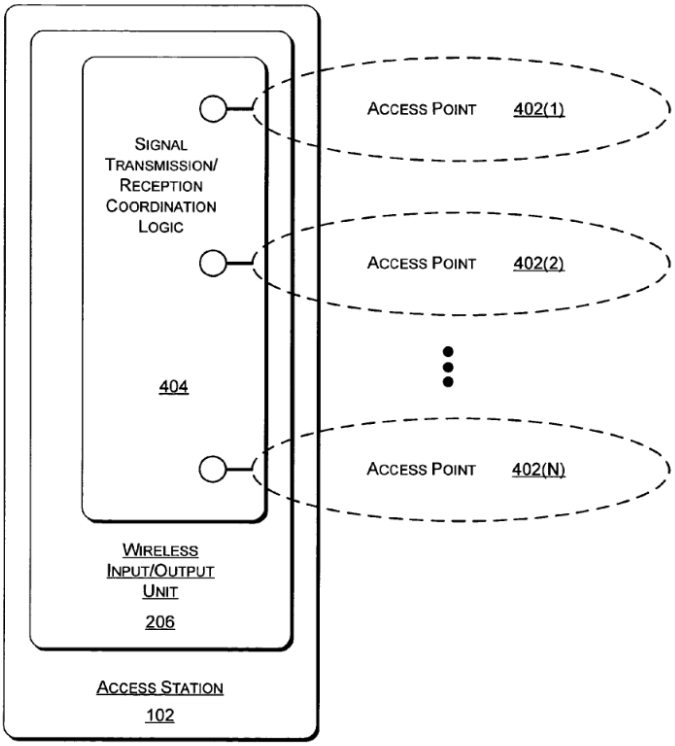


FIG. 4

Specifically, signal transmission/reception coordination logic 404 "is adapted to monitor the multiple access points 402(1 . . . N) to ascertain when a signal is being received." (CISCO-1001, 5:65-67.) And when "an access point 402(*w*) is ascertained to be **receiving** a signal, signal transmission/reception coordination logic 404 **is capable of restraining (e.g., limiting, preventing, delaying, etc.) the transmission of signals**[2] on the other access points 402(1 . . . w−1, w+1 . . . N)." (CISCO-1001, 6:1-5.) The monitoring, ascertaining, and

[2] All emphasis by bold added unless otherwise indicated.

restraining of signals can be "coordinated (e.g., analyzed and controlled) based on a per-channel basis." (CISCO-1001, 6:12-14.)

B. Claim Construction

Other than the term specified below, Petitioner does not believe it is necessary for the Board to expressly construe any term for the purpose of this IPR proceeding. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) ("only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy").

1. Signal Transmission/Reception Coordination Unit

Each challenged independent claim recites a "*signal transmission/reception coordination logic*[3]" [15B]/[30B]. The "*signal transmission/reception coordination logic*" limitations should be construed under 35 U.S.C. §112, ¶6 because the prefix "*signal transmission/reception coordination*" fails to impart any structure, as it merely describes the function of the logic.

When a claim term lacks the word "means," §112, ¶6 "will apply if the challenger demonstrates that the claim term fails to 'recite sufficiently definite structure' or else recites 'function without reciting sufficient structure for performing that function.'" *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349

[3] Claim language is indicated with italics throughout.

(Fed. Cir. 2015). For example, a limitation that "replaces the term 'means' with the term 'module' and recites three functions performed by the '… module'" is "in a format consistent with traditional means-plus-function claim limitations." *Id.* at 1350.

Here, the '939 Patent simply replaces the term "means" with "logic," and then recites the functions performed by the "logic." Like the term "module" in *Williamson*, "logic" is a well-known nonce word that can operate as a substitute for "means" and does not connote sufficiently definite structure. See, e.g., *Egenera, Inc. v. Cisco Sys., Inc.*, 972 F.3d 1367, 1374 ("As used, 'logic' is no more than a 'black box recitation of structure' that is simply a generic substitute for 'means.'"); *Tracktime, LLC v. Amazon.com*, No. 18-cv-1518-MN, 2021 WL 2823163, at *6 (D. Del. July 7, 2021) ("By itself, 'logic' connotes no more definite structure than 'executable program code' and thus does not remove the disputed terms from means-plus-function claiming."). The prefix "*signal transmission/reception coordination*" similarly fails to impart structure; it merely describes the logic's function. *Cf. Rain Computing, Inc. v. Samsung Elecs. Am., Inc.*, 989 F.3d 1002, 1006 (Fed. Cir. 2021) ("Nor does the prefix 'user identification' impart structure because it merely describes the function of the module: to identify a user.")

The Judge in a co-pending litigation in the Central District of California involving different parties ("CD CA Litigation"), adopting the findings in the

Report and Recommendation ("R&R") of the Special Master, agreed these limitations of claims 15 and 30 are means-plus-function terms governed by 35 U.S.C. §112, ¶6. (*See* CISCO-1013, pp. 8-10; CISCO-1014, pp. 44-59.)

a. Function

The specified function for each limitation is set forth below:

	Function
15	**[15B.1]** ascertaining, by monitoring the plurality of access points for received signals that **[15B.1a]** "a first access point of the plurality of access points is receiving a first signal on a first channel" **[15B.1b]** "a second access point of the plurality of access points is receiving a second signal that is ongoing on a second channel" **[15B.2]** "restrain[ing] at least a third access point of the plurality of access points from transmitting a third signal on a third channel responsive to the ascertaining that the first access point is receiving the first signal and that the second access point is receiving the second signal that is ongoing-on the second channel, wherein the restraining at least the third access point prevents degradation to the first and second signals"
30	**[30B.1]** "ascertaining, by monitoring the plurality of access points for received signals, that a first access point of the plurality of access points is receiving a first signal on a first channel" **[30B.2]** "restrain[ing] at least a second access point of the plurality of access points from transmitting a second signal on a second channel different from the first channel responsive to the ascertaining that the first access point is receiving the first signal"

(*See* CISCO-1013, pp. 8-10; CISCO-1014, pp. 57-58.)

b. Structure

The Judge in the co-pending CD CA litigation, adopting the findings of the

Special Master found that the corresponding structure for these limitations is "signal transmission/reception coordination logic 404 (with the characteristics and configuration set forth for the signal transmission/reception coordination logic 404 in the '939 patent), and equivalents thereof." (CISCO-1013, pp. 8-10; CISCO-1014, p. 59.) Defendants in the same litigation contended that the "*signal transmission/reception coordination logic*" limitations are indefinite because the specification fails to disclose sufficient structure. (*See* CISCO-1014, p. 44.) Solely for purposes of this proceeding[4], Petitioner adopts the structure articulated by the Judge and Special Master.

C. Level of Ordinary Skill in the Art

At the time of the alleged inventions, a Person of Ordinary Skill in the Art ("POSITA") would have been a person familiar with wireless communications networks and equipment and would have had at least a working knowledge of the protocols and architectures of common wireless communications networks at the time; and an understanding of the components and subsystems within available wireless communication equipment. A POSITA would have had at least a Bachelor's degree in Electrical Engineering or a related field, and three to four

[4] Petitioner reserves the right to challenge these limitations as indefinite in another forum.

years of work experience in wireless communications, or a Master's degree and at least two years of work experience in wireless communications.

V. Ground 1: Kasami renders claims 15-22 and 30-35 obvious.

A. Overview of Kasami

Kasami describes a wireless LAN system, illustrated in Figure 1 below, "in which a space division multiplexing access (SDMA) method is applied as a wireless communication system." (CISCO-1005, Kasami, 5:50-52.) Kasami's access point includes an adaptive array antenna 2 that "generates a plurality of radio waves 3-1 to 3-3 (hereinafter, referred to as antenna beams) with their comparatively narrow directivities to a plurality of stations 4-1 to 4-3." (CISCO-1005, 5:58-62.)

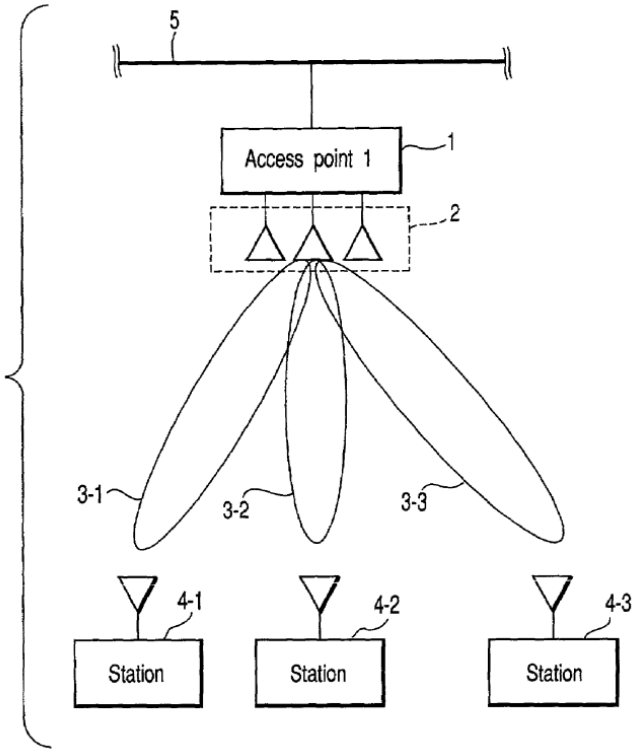


FIG. 1

Kasami, Figure 1

As shown in Figure 2 below, the access point 1 includes an "adaptive array antenna 2 that forms the antenna beams 3-1 to 3-3 oriented to the stations 4-1 to 4-3 to communicate with the station 4-1 to 4-3." (CISCO-1005, 6:19-22.) Adaptive array antenna 2 "is connected to receiver modules 11-1 to 11-3" such that reception signals carried by the antenna beams 3-1 to 3-3 oriented to these stations 4-1 to 4-3 are received at the receiver modules 11-1 to 11-3. (CISCO-1005, 6:22-26.) "At the receiver modules 11-1 to 11-3, reception signals are processed, and reception signals RS1 to RS3 are generated." (CISCO-1005, 6:26-28.)

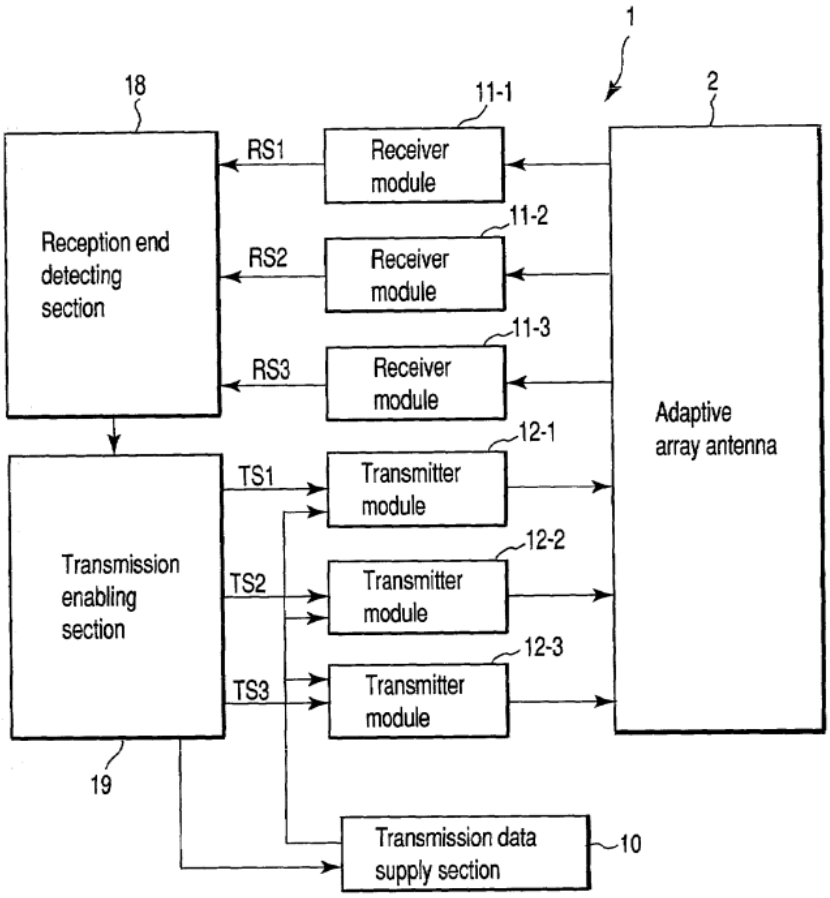


FIG. 2

Kasami, Figure 2

The "[t]ransmitter modules 12-1 to 12-3 are connected to the adaptive antenna 2." (CISCO-1005, 6:31-32.) At the transmitter modules 12-1 to 12-3, transmission signals TS1 to TS3 are generated, and supplied to the adaptive antenna 2. (CISCO-1005, 6:32-36.) The transmission signals TS1 to TS3 are then "transmitted to the wireless stations 4-1 to 4-3 by the antenna beams 3-1 to 3-3 formed by the adaptive array antenna 2." (CISCO-1005, 6:36-39.)

Access point 1 also includes "a reception end detecting section 18 and a

transmission enabling section 19." (CISCO-1005, 6:40-41.) When the access point is in reception mode, "reception end detecting section 18 detects a final transfer time in a reception signal in the receiver modules 11-1 to 11-3, thereby generating a reception end signal." (CISCO-1005, 6:41-47.) Transmission enabling section 19 "supplies a transmission enable signal to the transmitter modules 12-1 to 12-3 in response to the reception end signal." (CISCO-1005, 6:47-49.) Transmission enabling section 19 "switches the transmitter modules 12-1 to 12-3 from the transmission disable state to the transmission enable state in response to the transmission enable signal." (CISCO-1005, 6:56-59.) Transmission enabling section 19 maintains "transmitter modules 12-1 to 12-3 in a transmission disable state in the reception mode, and the receiver modules 11-1 to 11-3 in a receiving disable state in the transmission mode." (CISCO-1005, 6:52-56.)

B. Independent Claims 15 and 30[5].

The two challenged independent claims recite substantially similar subject matter. Each recites an "*apparatus*" comprising a "*wireless input/output (I/O) unit that is configured to establish a plurality of access points*" and "*signal transmission/reception coordination logic*" that ascertains whether certain access

[5] A listing of independent claims with labels added is provided in the Listing of Independent Claims Appendix.

points are receiving signals and restrains other access points from transmitting signals. The primary difference between the independent claims lies in the circumstances of when reception of signals is ascertained and when an access point is restrained. For ease of discussion, Petitioner addresses each of the independent claims together.

1. Preamble [15P]/[30P]

Kasami discloses an "*apparatus*" [15P]/[30P]. Kasami describes a "**wireless communication apparatus**[6] includ[ing] transmitter modules and receiver modules for carrying out transmission/reception via a plurality of antenna beams formed by an adaptive array antenna between stations." (CISCO-1005, Abstract; Figure 2

[6] Kasami refers to its "wireless communication apparatus" as an "access point." (*See* CISCO-1005, 6:14-18.) As Petitioner notes in Section IV.A, the '939 patent refers to the network-based component that includes an antenna array and is connected to a backbone network as an "access station." (*See* CISCO-1001, 4:17-20.) Kasami's "access point" is therefore equivalent to the "access station" of the '939 patent which is an embodiment of the "*apparatus*" of claims 15 and 30. (CISCO-1003, ¶¶76-77.) For ease of discussion and to avoid confusion, Petitioner refers to Kasami's access point 1 using Kasami's generic terminology "wireless communication apparatus."

below.) Kasami's wireless communication apparatus is further "connected to a backbone network 5." (CISCO-1005, 5:55-57.) Thus, Kasami discloses an "*apparatus*" [15P]/[30P] having the claimed "*wireless I/O unit*" and "*signal transmission/reception coordination logic*" as discussed in Sections V.B.2-3. (CISCO-1003, ¶¶75-77.)

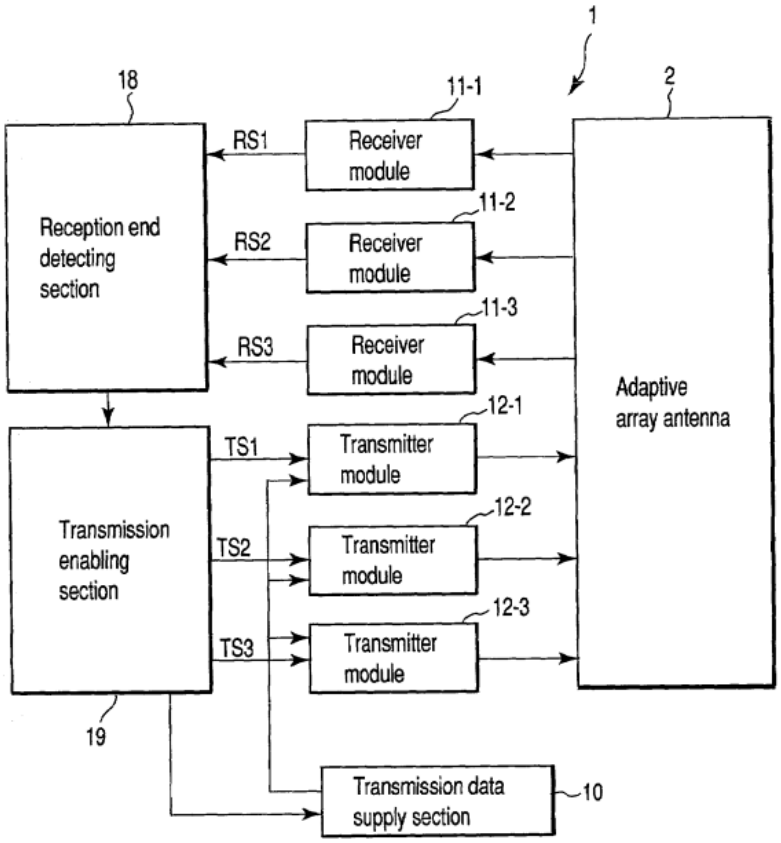


FIG. 2

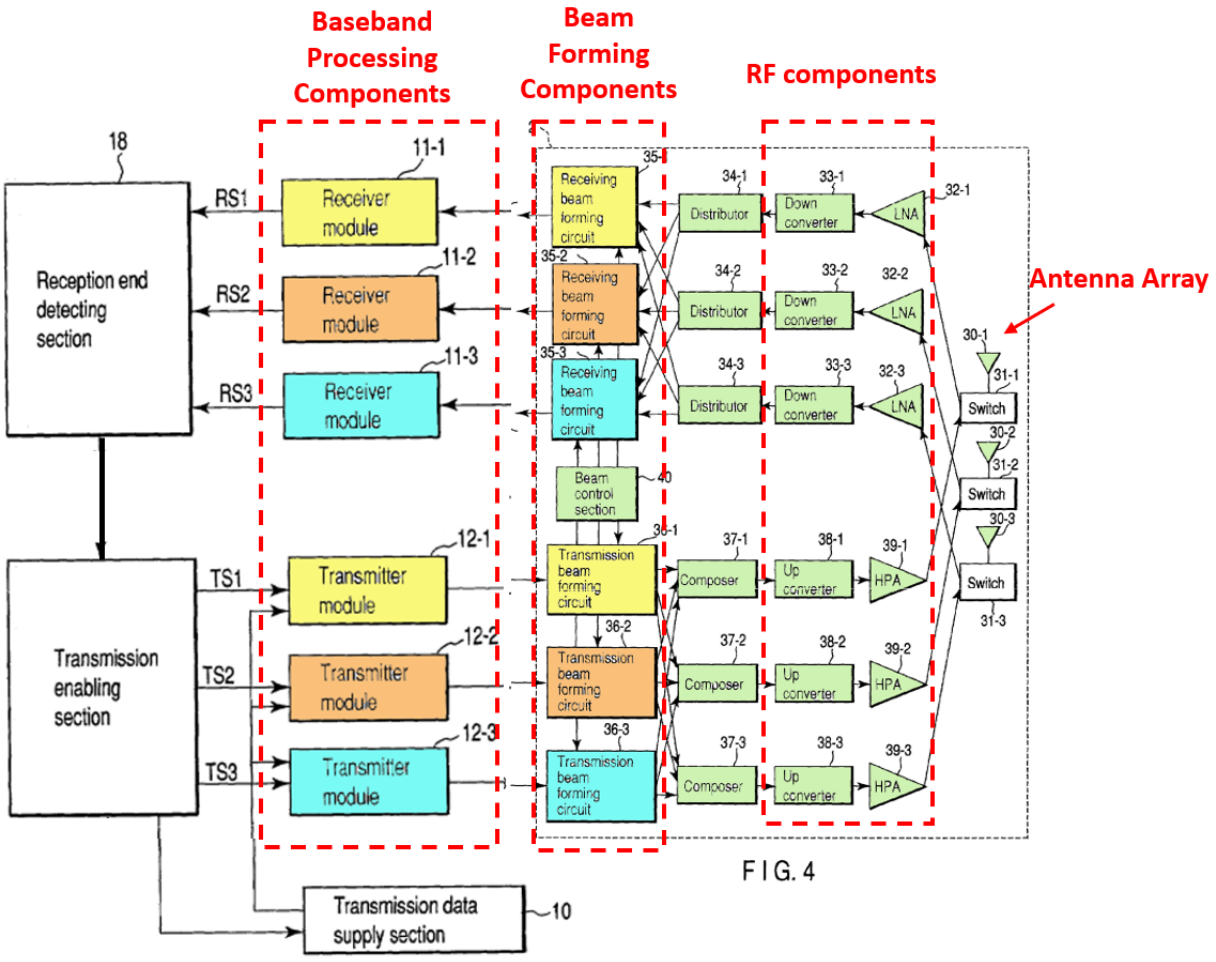
2. "Wireless input/output (I/O) unit" limitations [15A]/[30A].

Claims 15 and 30 each recites "*a wireless input/output (I/O) unit that is configured to establish a plurality of access points*" [15A]/[30A]. Kasami discloses

this limitation as set forth below. (CISCO-1003, ¶¶78-93, 128.)

a. Kasami discloses a "*wireless input/output (I/O) unit*."

Kasami discloses a "*wireless input/output (I/O) unit*." (CISCO-1003, ¶¶78-87, 128.) Kasami's wireless communication apparatus (access point 1) includes an "adaptive array antenna 2 that forms the antenna beams 3-1 to 3-3 oriented to the stations 4-1 to 4-3 to communicate with the station 4-1 to 4-3." (CISCO-1005, 6:19-22.) As shown in annotated Figure 4 (below right), the adaptive array antenna 2 includes antenna elements 30-1 to 30-3 "for receiving an RF signal." (CISCO-1005, 7:45-55.) The array antenna 2 also has a receive (input) side with three receive paths and a transmit (output) side with three transmit paths. (CISCO-1003, ¶¶78, 82.) Each antenna element (30-1 to 30-3) is coupled to a receive path/transmit path pair via a transmission/reception changeover switch 31-1. (CISCO-1003, ¶82.)



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Kasami, Excerpted/Annotated Figure 2 (Left), Annotated Figure 4 (Right)

Each receive (input) path includes a low noise amplifier (LNA) 32 and down converter 33 "for converting a frequency bandwidth from a radio frequency (RF) of an RF signal to an intermediate frequency (IF) or base band (BB)." (CISCO-1005, 7:58-62.) Each transmit (output) path includes an up converter 38 "for converting an intermediate frequency (IF) or a base band into a radio frequency (RF) of an RF signal" and a power amplifier (PA) 39. (CISCO-1005, 8:11-15.) LNAs, PAs, up converters, and down converters are all RF components. (CISCO-

1003, ¶87.)

The antenna array further includes receiving beam forming circuits 35 for "forming a reception signal corresponding to each reception antenna beam" on the receive (input) side, transmission beam forming circuits 36 for forming transmission beam signals on the transmit (output) side, and beam weight control section 40 for setting the reception and transmission complex weighting coefficients used by the beam forming circuits. (CISCO-1005, 8:49-65.)

The receive (input) side of the adaptive array antenna 2 is connected to receiver modules 11-1 to 11-3 which process reception signals carried by beams 3-1 to 3-3 including performing "modulation and demodulation of the reception signal[s]." (CISCO-1005, 6:28-30.) The transmit (output) side of the adaptive array antenna 2 is connected to transmitter modules 12-1 to 12-3 which generate transmission signals to be transmitted to stations 4-1 to 4-3 via the RF components described above. (CISCO-1005, 6:32-35.) Kasami's receiver modules 11 and transmitter modules 12 therefore include baseband processing components. (CISCO-1003, ¶87.)

Kasami's RF components (LNAs, PAs, down converters, and up converters), beam forming components, receiver modules, and transmitter modules are each part of a "*wireless input/output (I/O) unit*." (CISCO-1003, ¶¶87, 128.)

b. Kasami discloses a wireless I/O unit "*configured to establish a plurality of access points*."

Kasami's "*wireless input/output (I/O) unit*" is further "*configured to establish a plurality of access points*." (CISCO-1003, ¶¶88-93, 128.) The '939 patent does not provide an explicit definition for the term "*access point.*" The '939 patent mentions that "[e]ach respective RF part 610, along with at least part of beamformer 612 and/or antenna array 208, and each respective communication beam 202 **may also correspond** to the **different respective access points 402**" of Figure 4 reproduced below. (CISCO-1001, 9:13-16.) Thus, in the '939 patent, an "*access point*" is defined relative to a directed communication beam 202, the components associated with forming that beam, and components associated with processing signals corresponding to that beam. (CISCO-1003, ¶89; *see also*, '939 patent, claim 9 (reciting that "*each access point of the plurality of access points corresponds to a communication beam of a plurality of communication beams that emanate from the access station*").)

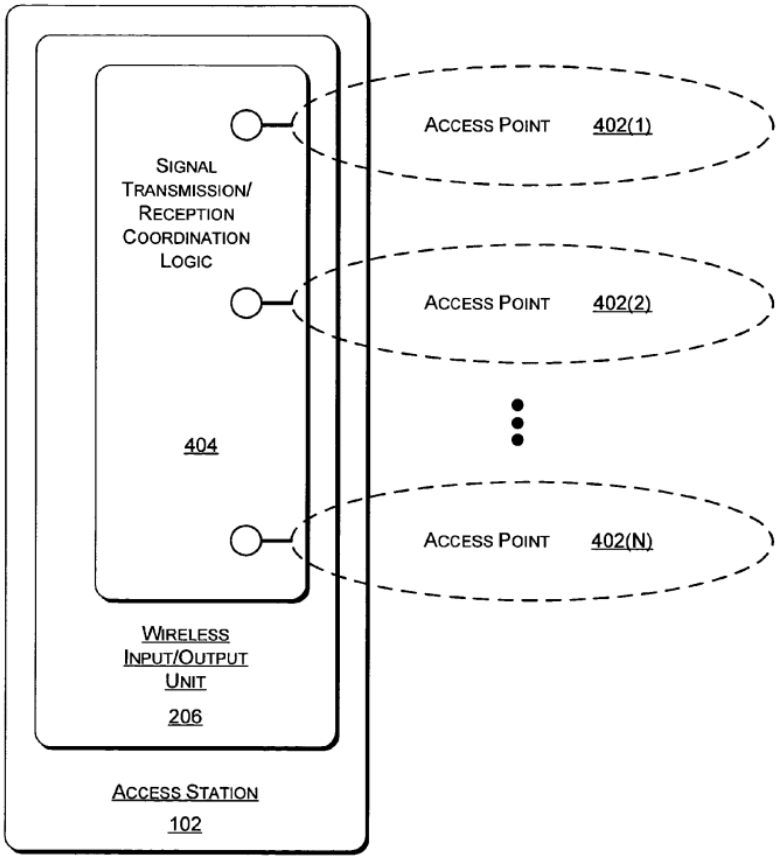


FIG. 4

'939 Patent, Figure 4

The '939 patent also does not provide any details regarding the actions required to achieve the recited function of "*establish[ing] a plurality of access points*." The '939 patent merely describes that "multiple communication beams 202(1), 202(2) … 202(N) may be produced by wireless I/O unit 206" by using a beamformer along with an antenna array. (CISCO-1001, 4:44-46.) Thus, "*establish[ing] a plurality of access points*" in the '939 patent at least encompasses forming a plurality of directed communication beams which each define an "*access*

point." (CISCO-1003, ¶90.)

Kasami's wireless communication apparatus (access point 1) includes a plurality of "*access points*" as that term is used in the '939 patent. (CISCO-1003, ¶91.) Kasami's adaptive array antenna 2, illustrated in annotated Figure 1, "generates a plurality of radio waves 3-1 to 3-3 (hereinafter, referred to as antenna beams) with their comparatively narrow directivities to a plurality of stations 4-1 to 4-3." (CISCO-1005, 5:58-62.) Directed communication beam 3-1 (shaded yellow) is part of a first "*access point*"; directed communication beam 3-2 (shaded orange) is part of a second "*access point*"' and directed communication beam 3-3 (shaded blue) is part of a third "*access point*." (CISCO-1003, ¶91.)

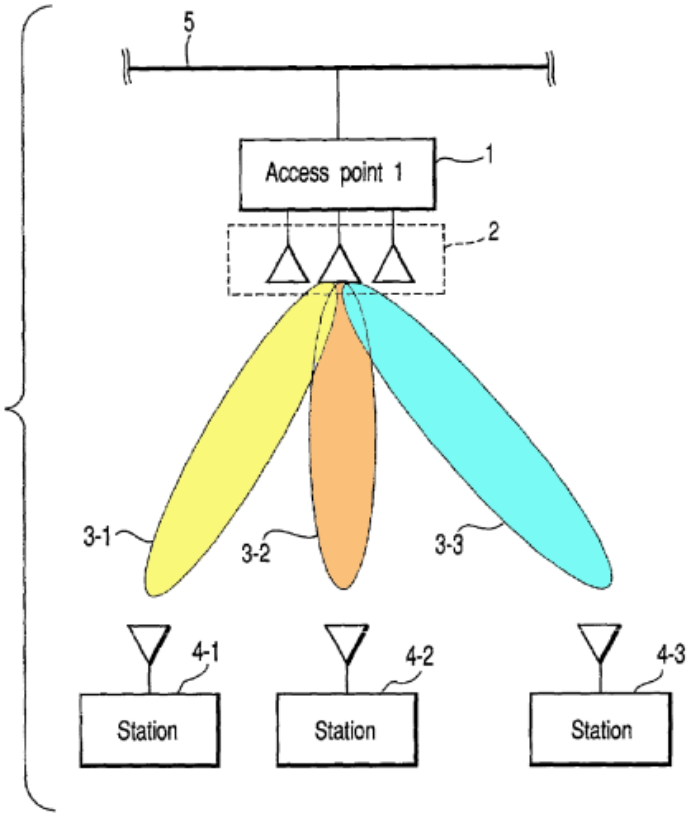
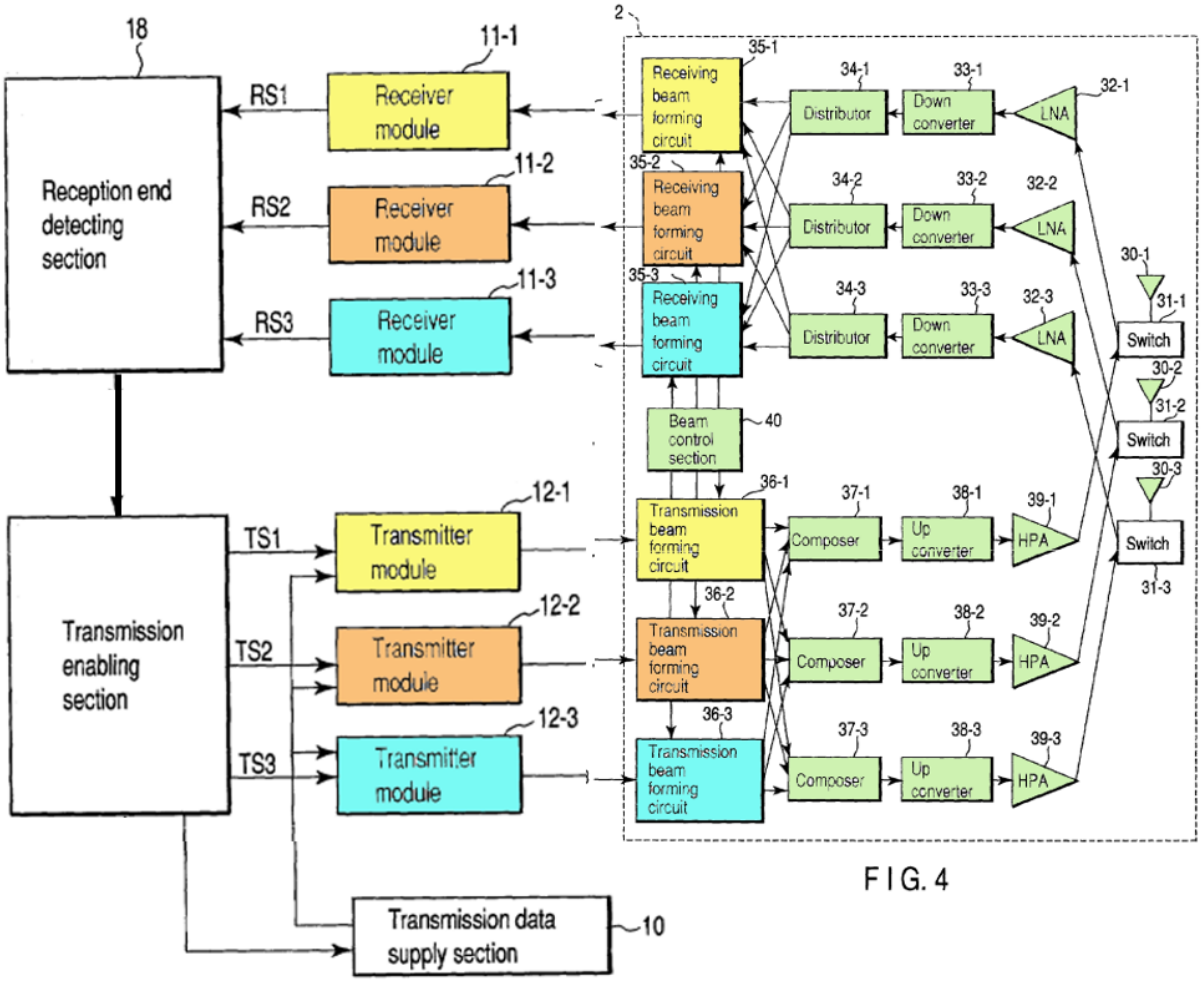


FIG. 1

Kasami, Annotated Figure 1

Kasami teaches that in its SDMA system, transmitter and receiver modules, illustrated in excerpted Figure 2 below left, "correspond[] to a plurality of antenna beams formed by an adaptive antenna array." (CISCO-1005, 1:64-67.) Specifically, in Kasami, "signals corresponding to the reception antenna beams from the receiving beam forming circuits 35-1 to 35-3 are supplied to the receiver modules 11-1 to 11-3" shown in Figure 2 at top. (CISCO-1005, 8:54-57.) And transmission signals TS1 to TS3 are received from transmitter modules 12-1 to 12-3 (shown in Figure 2 at bottom) and "inputted to the transmission beam forming

circuits 36-1 to 36-3." (CISCO-1005, 8:58-61.)



F I G. 4

Kasami, Excerpted/Annotated Figure 2 (Left), Annotated Figure 4 (Right)

Therefore, in Kasami, receiver module 11-1, transmitter module 12-1, receiving beam forming circuit 35-1, and transmission beam forming circuit 36-1 correspond to a directed beam (e.g., beam 3-1) and are part of a recited "*access point*" (shaded yellow); receiver module 11-2, transmitter module 12-2, receiving beam forming circuit 35-2, and transmission beam forming circuit 36- correspond

to a directed beam (e.g., beam 3-2) and are collectively part of a recited "*access point*" (shaded orange); and receiver module 11-3, transmitter module 12-3, receiving beam forming circuit 35-3, and transmission beam forming circuit 36-3 correspond to a directed beam (e.g., beam 3-3) and are collectively part of a recited "*access point*" (shaded blue). (CISCO-1003, ¶93.) The RF components and antenna element of Kasami's antenna array (shaded green) are shared by each of its "*access points*." (CISCO-1003, ¶93.)

Like the '939 patent, Kasami discloses that its "*wireless input/output (I/O) unit is configured to establish a plurality of access points*" by using a beamformer to produce a plurality of directed communications beams. (CISCO-1003, ¶92.) In Kasami, directed communication beams (e.g., beams 3-1 to 3-3) are generated by beam forming components in adaptive array antenna 2 which are part of the "*wireless input/output (I/O) unit*" as discussed above. Specifically, in receiving beam forming circuits 35-1 to 35-3, illustrated in annotated Figure 4 above right, input signals received by each antenna element "are weighted and combined" according to reception complex weighting coefficients provided by beam control section 40. (CISCO-1005, 8:49-52.) Through this process, "a plurality of reception antenna beams are formed." (CISCO-1005, 8:53-54.) Thus, receiving beam forming circuit 35-1 (shaded yellow) generates a first reception beam; receiving beam forming circuit 35-2 (shaded orange) generates a second reception beam; and

receiving beam forming circuit 35-3 (shaded blue) generates a third reception beam. (CISCO-1003, ¶93.)

Similarly, transmission beam forming circuits 36-1 to 36-3 "form transmission beams by weighting the transmission signal in accordance with the transmission complex weighting coefficient set by the beam control section 40." (CISCO-1005, 8:3-9.) Thus, transmission beam forming circuit 36-1 (shaded yellow) generates a first transmission beam (e.g., beam 3-1); transmission beam forming circuit 35-2 (shaded orange) generates a second transmission beam; and transmission beam forming circuit 35-3 (shaded blue) generates a third transmission beam. (CISCO-1003, ¶93.)

Kasami further teaches that "[d]uring transmission and reception, a weighting coefficient for communicating with the same station is set at the mutually corresponding beam forming circuits." (CISCO-1005, 9:22-26.) Therefore, in Kasami, the transmission beam between the wireless communication apparatus and a station corresponds to the reception beam between the wireless communication apparatus and the same station. (CISCO-1003, ¶92.) Accordingly, receiving beam forming circuit 35-1 and transmission beam forming circuit 36-1 generate a first reception/transmission directed beam (e.g., beam 3-1); receiving beam forming circuit 35-2 and transmission beam forming circuit 36-2 generate a second reception/transmission directed beam (e.g., beam 3-2); and receiving beam

forming circuit 35-3 and transmission beam forming circuit 36-3 generate a third reception/transmission directed beam (e.g., beam 3-3). (CISCO-1003, ¶93.)

By forming directed communication beams which create individual "*access point*s" in the network-based apparatus, Kasami discloses a "*wireless input/output (I/O) unit*" that is "*configured to establish a plurality of access points*." (CISCO-1003, ¶88-93.)

3. "*Signal transmission/reception coordination logic*" [15B]/[30B]

Claims 15 and 30 each recite a "*signal transmission/reception coordination logic.*" As discussed in the claim construction section, these limitations should be construed as means-plus-function limitations under 35 U.S.C. §112, ¶6. Kasami discloses both the structure and recited functions for the "*signal transmission/reception coordination logic*" as detailed below. (CISCO-1003, ¶¶94-125, 129-141.) Should Patent Owner contend that this term should not be construed as a means-plus-function term, Kasami teaches the limitation under the plain and ordinary meaning, for the same reasons discussed in this section. (*Id.*)

a. Structure

The structure identified for the claimed "*signal transmission/reception coordination logic*" is "signal transmission/reception coordination logic 404 (with the characteristics and configuration set forth for the signal transmission/reception coordination logic 404 in the '939 patent), and equivalents thereof." (*See* Section

IV.B.1; CISCO-1014, pp. 58-59.)

(i) Signal transmission/reception coordination logic in the '939 patent.

The signal transmission/reception coordination logic 404 of the '939 patent, illustrated in Figure 4 below left, "may be implemented as hardware, software, firmware, some combination thereof, and so forth." (CISCO-1001, 5:35-37.) The signal transmission/reception coordination logic 404 (shaded purple) generally "coordinates uplink signal receptions and downlink signal transmissions across different access points 402 so as to avoid or at least reduce the frequency at which downlink signals are transmitted at a first access point 402(y) while uplink signals are being received at a second access point 402(x)." (CISCO-1001, 5:58-64.) In operation, as shown in Figure 5 (below right), the signal transmission/reception coordination logic 404 performs the steps of "monitor[ing] multiple access points" (step 502), "ascertain[ing] that an access point is receiving a signal" (step 504), and "restrain[ing] other access points from transmitting a signal" (506). (*See* CISCO-1001, 6:16-38.)

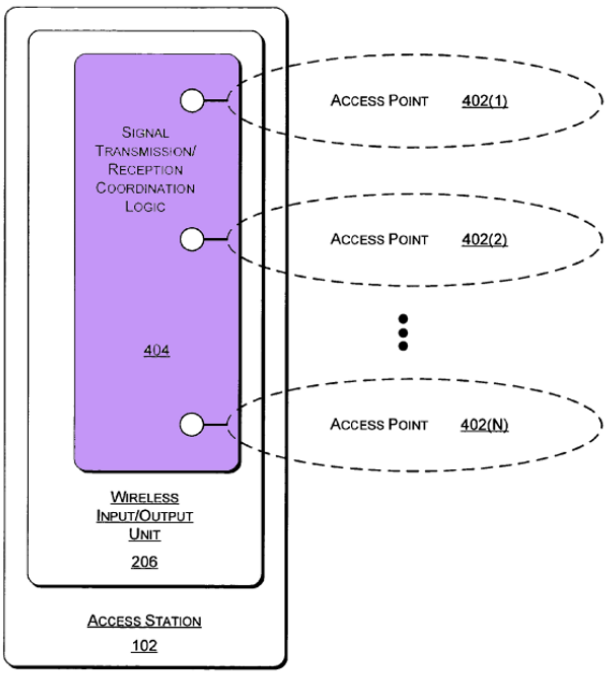


FIG. 4

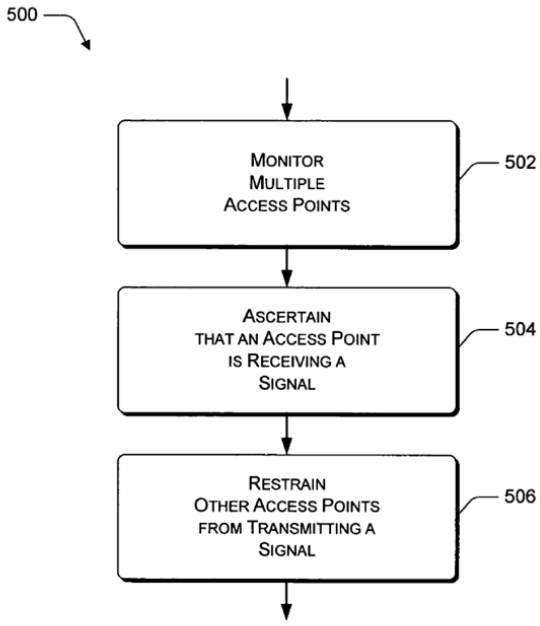


FIG. 5

'939 Patent, Annotated Figure 4 (Left), Figure 5 (right)

(ii) Kasami discloses an equivalent structure.

Kasami discloses logic having equivalent structure. (CISCO-1003, ¶¶97-100, 129-130.) Kasami's wireless communication apparatus 1 (access point) (the recited "*apparatus*") includes "a reception end detecting section 18 and a transmission enabling section 19" shaded purple in annotated Figure 2 below. During reception mode, "the reception end detecting section 18 detects a final transfer time in a reception signal in the receiver modules 11-1 to 11-3, thereby generating a reception end signal." (CISCO-1005, 6:42-47.) Transmission enabling

section 19 then "supplies a transmission enable signal to the transmitter modules 12-1 to 12-3 in response to the reception end signal." (CISCO-1005, 6:47-49.) Transmission enabling section 19 "maintains the transmitter modules 12-1 to 12-3 in a transmission disable state in the reception mode, and the receiver modules 11-1 to 11-3 in a receiving disable state in the transmission mode." (CISCO-1005, 6:52-56.) In this manner, "good communication between the access point 1 and the wireless stations 4-1 to 4-3 each can be established **without causing interference between transmission and reception**." (CISCO-1005, 7:46-49.) Thus, Kasami operates in the same general manner as signal transmission/reception logic of the '939 patent—coordinating uplink receptions and downlink signal transmissions across different access points to avoid transmission from an access point while signals are being received at another access point. (CISCO-1003, ¶¶97-99, 130.)

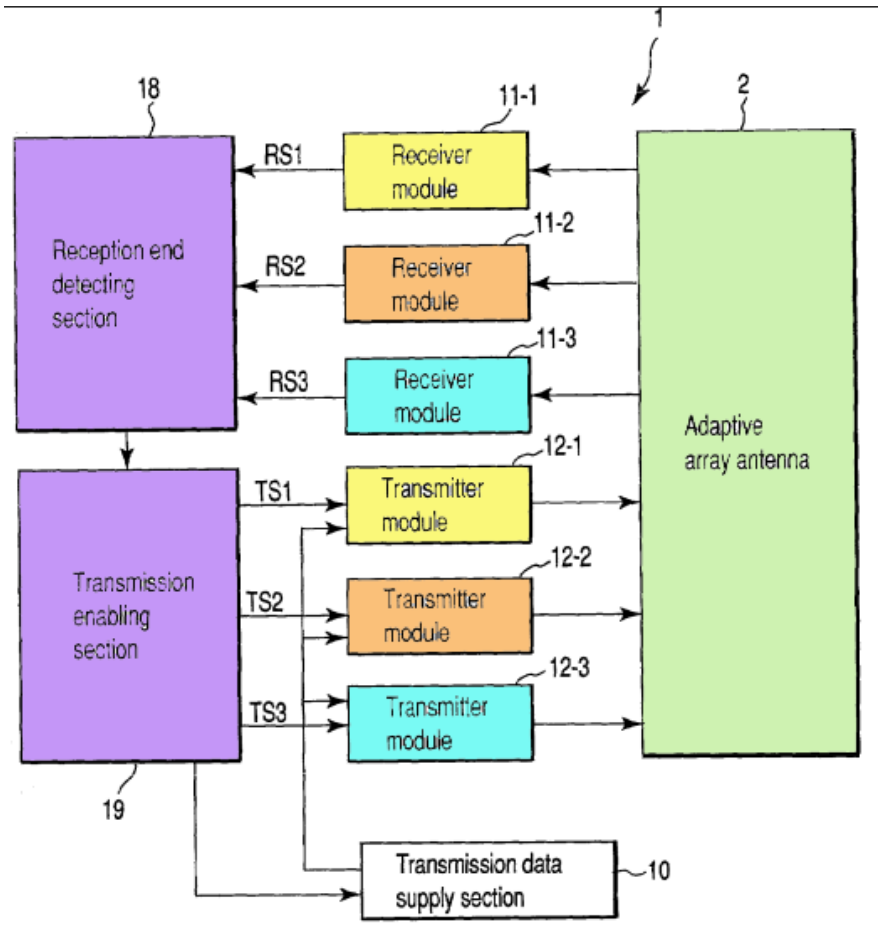


FIG. 2

Kasami, Annotated Figure 2

A POSITA would have understood that Kasami's reception end detecting section 18 and transmission enabling section 19 are implemented as either hardware, software, firmware, or some combination thereof because it was commonplace prior to the '939 patent to implement components of a wireless communication apparatus using hardware and/or software. (CISCO-1003, ¶100, 130.) Reception end detecting section 18 and transmission enabling section 19 are

therefore collectively the recited "*signal transmission/reception logic*" and have equivalent structure as the signal transmission/reception logic 404 of the '939 patent. (CISCO-1003, ¶¶97-100, 130.)

b. Functions

The signal transmission/reception logic recites two general functions—"*ascertaining*" and "*restraining*." The independent claims differ solely on the scope of these functions. As detailed in this section, Kasami teaches or at least suggests each of the recited functions.

Ascertaining Function	
[15B.1] [signal transmission/reception coordination logic that is capable of] *ascertaining, by monitoring the plurality of access points for received signals, that:*	**[30B.1]** [signal transmission/reception coordination logic that is capable of] *ascertaining, by monitoring the plurality of access points for received signals, that*
[15B.1a] *a first access point of the plurality of access points is receiving a first signal on a first channel,*	**[30B.1a]** *a first access point of the plurality of access points is receiving a first signal on a first channel,*
[15B.1b] *a second access point of the plurality of access points is receiving a second signal that is ongoing on a second channel,*	
Restraining Function	
[15B.2] [signal transmission/reception logic adapted] *to restrain at least a third access point of the plurality of access points from transmitting a third signal on a third channel responsive to the ascertaining that the first access*	**[30B.2]** [and that is adapted] *to restrain at least a second access point of the plurality of access points from transmitting a second signal on a second channel different from the first channel responsive to the ascertaining*

point is receiving the first signal and that the second access point is receiving the second signal that is ongoing-on the second channel	*that the first access point is receiving the first signal.*

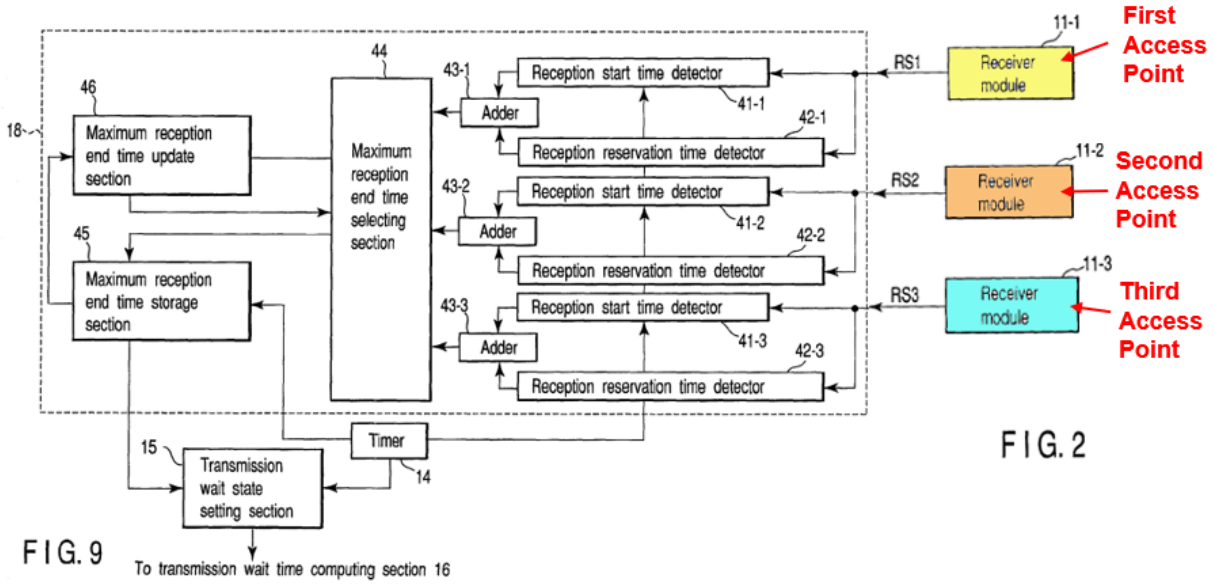
(i) "*Ascertaining*" functions ([15B.1]/[30B.1])

Kasami's reception end detecting section 18, illustrated in annotated Figure 9 below, "*ascertain[s]*" that one or more access points within the apparatus is receiving a signal by monitoring its access points.

KASAMI'S MONITORING

As illustrated in Figure 9 of Kasami (left) and excerpts from Figure 2 (right), a separate reception start time detector 41 and reception reservation time detector 42 pair are connected to each receiver module. The reception start time detectors 41 detect a transmission start time "as a time at which a first packet of the reception signals RS1 to RS3 each is detected, i.e., a time at which the wireless stations 4-1 to 4-3 being transmission sources transmit the packet." (CISCO-1005, 11:44-50.) The reception reservation time detectors 42 detect a reception reservation time period "corresponding to a time period for the stations 4-1 to 4-3 each being a transmission source to reserve a communication channel for the purpose of transmission is detected from the packet header of the reception signals RS1 to RS3 each." (CISCO-1005, 11:51-57.) Thus, Kasami's reception end detecting section 18 "*monitor[s] the plurality of access points for received signals*"

to "*ascertain*" that one or more access points are "*receiving*" a signal. (CISCO-1003, ¶¶102-105, 132; *See also*, CISCO-1001, 6:23-25 (disclosing detection of signals as a type of monitoring).)



Kasami Figure 9 (left); Excerpts from Figure 2 (right)

The "reception start time and reception reservation time period detected from the reception signals RS1 to RS3 respectively are added, whereby the reception end time of the reception signals RS1 to RS3 each is computed." (CISCO-1005, 11:58-62.) The maximum reception end time (latest reception end time of the reception end times of reception signals RS1 to RS3) is provided to the transmission waiting state setting section 15. (*See* CISCO-1005, 11:63-12:24.)

The exemplary timing diagram of Figure 10 illustrates the monitoring of each "*access point*" to determine start time and duration of signal reception in

Kasami's wireless communications apparatus. In this figure, "'ts1' to 'ts3' denote the reception start times of the reception signals RS1 to RS3, Trs1 to Trs3 denote the reception reservation times of the reception signals RS1 to RS3, and 'te1 to 'te3' denote the reception end times of the reception signals RS1 to RS3." (CISCO-1005, 12:42-48.) The reception end time "te2" "denotes the predetermined maximum end time 'temax'" for all monitored reception signals. (Kasami, 12:48-50.) Transmissions "are started simultaneously" after "the elapse of a reception wait time 'Twait' from 'temax.'" (CISCO-1005, 12:50-52.)

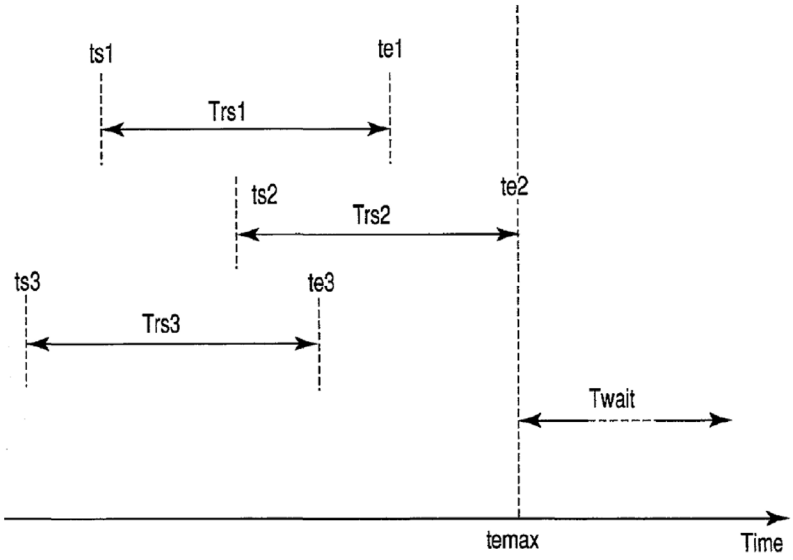


FIG. 10

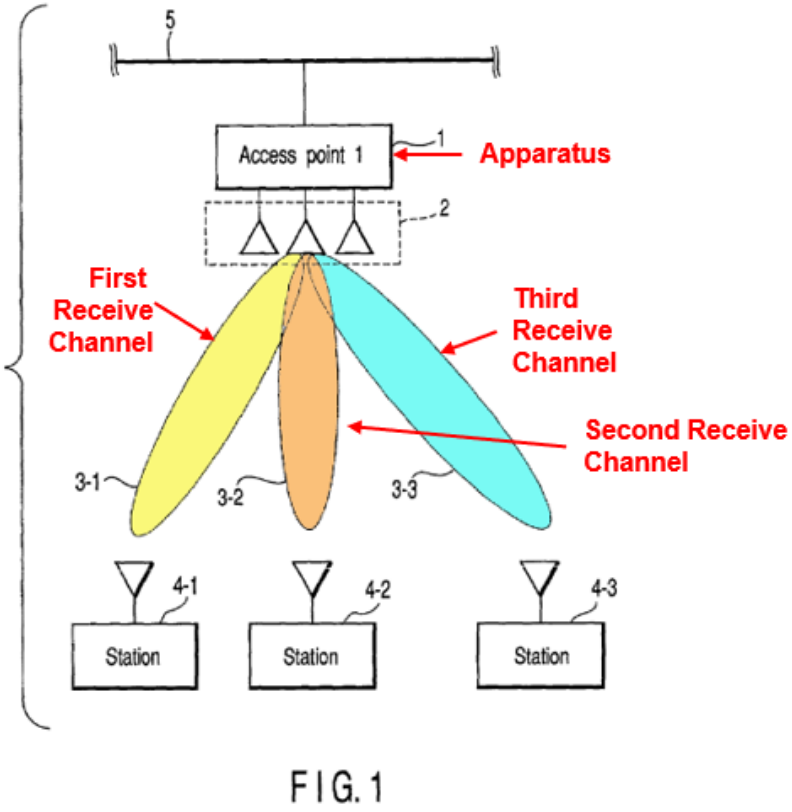
CLAIM 15 - "*ASCERTAINING*" FUNCTIONS [15B.1]

Kasami teaches a "*first access point*" that "*is receiving a first signal on a first channel.*" (*See* CISCO-1003, ¶¶106-111.) Kasami is directed to "a wireless communication station and, more particularly, to an access point which

communicates with wireless communication stations **via a plurality of channels**." (CISCO-1005, 1:14-17.) More specifically, Kasami's wireless communication apparatus (access point 1) "can communicate with the plurality of stations 4-1 and 4-3 via the **substantially same channel or adjacent channel** while reducing interference between stations" by means of antenna beams 3-1 to 3-3 illustrated in annotated Figure 1 below. (CISCO-1005, 5:63-66; *see also*, 25:62-26:2 ("There is a case in which wireless module shares one array antenna, an antenna beam pattern is provided as multiple beams, thereby transmitting/receiving a radio signal to each wireless module. Because of this, the channels as claimed in claims may be channels different from each other in frequency or may be such channels as to accommodate a specific wireless station decided depending on the frequency and antenna beam pattern"); claims 4 and 14.)

As discussed in Section V.B.2.b, each of Kasami's antenna beams is associated with an "*access point*" in the same manner that the '939 patent associates a wireless coverage area (and beam pattern) with an access point. (CISCO-1003, ¶106.) It was well-known prior to the '939 patent that a network-based apparatus in a wireless network utilized channels to communicate with mobile devices (e.g., frequency and/or time channels) and that multiple different channels could be used for the downlink and/or uplink. (CISCO-1003, ¶109*, see also*, ¶¶39-44, 59-62, *citing, e.g.,* CISCO-1011, Roy, 1:35-39.) Moreover, in an

SDMA system, like that of Kasami, each independent spatially distinct beam may be considered a separate spatial channel. (CISCO-1003, ¶¶109, 44.) A POSITA would have therefore understood from Kasami's above teachings and the general knowledge in the art that (1) each of the individual "*access points*" in Kasami communicate with a mobile device via a "*channel*"; (2) Kasami's "*access points*" are configured in embodiments to use different "*channels*", as illustrated in annotated Figure 1 for the uplink (receive) path; and (3) each "*access point*" may use a "*channel*" for downlink transmission and a different "*channel*" for uplink transmission. (CISCO-1003, ¶110.)



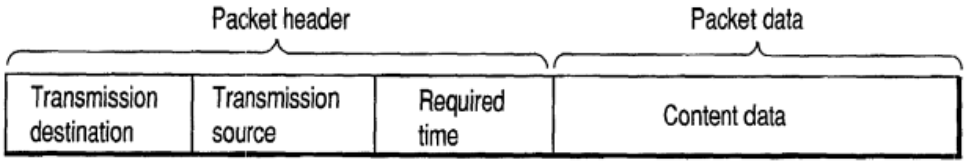
Kasami, Annotated Figure 1

Because Kasami's reception end detecting section monitors an "*access point*" to detect when signals are being received by that "*access point*" and each "*access point*" communicates via a "*channel*," Kasami teaches or at least suggests "*signal transmission/reception logic that is capable of ascertaining, by monitoring the plurality of access points for received signals, that: a first access point of the plurality of access points is receiving a first signal on a first channel*" [15B.1a]. (CISCO-1003, ¶¶101-111; *see also*, CISCO-1001, 6:23-25 (relating detecting to monitoring).)

Kasami discloses that the "*ascertaining*" of signal reception occurs while receipt of signals by another access point (e.g., a "*second access point*") is "*ongoing*." (CISCO-1003, ¶112.) In Kasami, "[t]he reception signal inputted to the receiver modules 11-1 to 11-3 each includes a data packet" having, for example, "required time" field indicative of the "time period required from the start of reception of this data packet to the end of such reception." (CISCO-1005, 9:42-51.) This required time "is isolated from the packet" and is sent along with the reception start time to the reception time detection section 20 associated with the receiver module 11 which adds the values to determine the reception end time, as discussed above. (CISCO-1005, 9:52-58.) A POSITA would have understood that the packet header is being processed while the content data for that packet is being received by Kasami's "*apparatus*." (CISCO-1003, ¶112.) Thus, Kasami's

reception end detection section 18 "*ascertain[s]*" that a receiver module (e.g., receiver module 11-2 corresponding to a "*second access point*") is receiving a second signal while the receipt of that signal is still ongoing. (CISCO-1003, ¶112; *see also*, Kasami, claim 4 (("a control section configured to control the second wireless communication module to prevent the second wireless communication module from transmitting the data packet in response to a detection of the first reception mode **while the first wireless module is receiving a data packet in the first reception mode**").)

FIG. 6



Kasami further discloses that its "*ascertaining*" occurs while receipt of signals by multiple "*access points*" is ongoing, as illustrated in Figure 10 below. As shown in this figure, Kasami ascertains when more than one reception signal is being received at its "*apparatus*" simultaneously. (CISCO-1003, ¶113.)

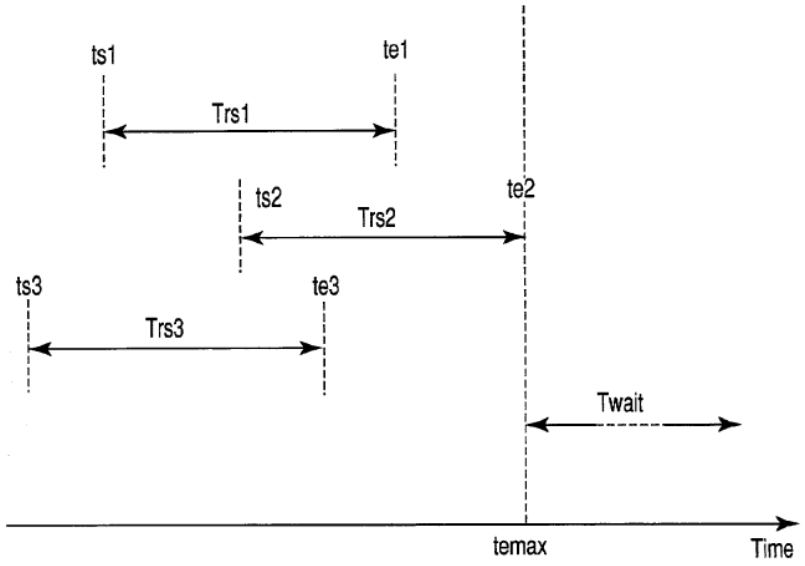


FIG. 10

Kasami, Figure 10

Kasami discloses that a second signal is received by a second access point on a second channel. Claim 15 does not require that the "*first channel*" be different (e.g., different frequency, code, time, or combination thereof) than the "*second channel.*" (CISCO-1003, ¶114.) As discussed above and illustrated in annotated Figure 1 above, Kasami's second "*access point*" (shaded orange) communicates using the "**substantially same channel or adjacent channel**" (i.e., a "*second channel*"). (CISCO-1003, ¶114; CISCO-1005, 5:63-66.) Kasami therefore teaches embodiments where the "*channel*" (e.g., frequency channel) used by the "*second access point*" is the same as the "*channel*" used by the "*first access point*" and embodiments where the channel is different than the "*channel*" used by the "*first access point*." (*See, e.g.,* CISCO-1005, 5:63-66, 25:62-26:2, claims 4 and 14;

CISCO-1003, ¶114.) Moreover, in SDMA, each directed communication beam is a different "spatial channel." (CISCO-1003, ¶¶114, 44.) Thus, Kasami teaches or at least suggests the reception end detecting section 18 "*is capable of ascertaining, by monitoring the plurality of access points for received signals, that … a second access point of the plurality of access points is receiving a second signal that is ongoing on a second channel*" [15B.1b]. (CISCO-1003, ¶¶101-114.)

CLAIM 30 - "*ASCERTAINING*" FUNCTION [30B.1]/[30B.1a]

The "*ascertaining*" function of claim 30 [30B.1]/[30B.1a] is identical to the first "*ascertaining*" function of claim 15 [15B.1]/[15B.1a]. Therefore, for the reasons discussed above, Kasami teaches or at least suggests that the reception end detecting section 18 "*is capable of ascertaining, by monitoring the plurality of access points for received signals, that a first access point of the plurality of access points is receiving a first signal on a first channel*" [30B.1a]. (CISCO-1003, ¶132.)

(ii) "*Restrain[ing]*" functions.

Each independent claim also recites that the "*signal transmission/reception coordination logic*" performs one or more "*restraining*" specific functions. Kasami teaches or at least suggests each of these functions, as detailed below.

KASAMI'S "*RESTRAINING*"

Kasami's transmission enabling section 19, illustrated in Figure 8 below, "*restrains*" at least one access point within the apparatus from transmitting based

on the reception of a signal at an access point of the apparatus. (CISCO-1003, ¶¶115-122) In general, transmission enabling section 19 "**maintains the transmitter modules 12-1 to 12-3 in a transmission disable state in the reception mode**, and the receiver modules 11-1 to 11-3 in a receiving disable state in the transmission mode." (CISCO-1005, 6:52-56.) To switch the "*apparatus*" from the reception mode to the transmission mode, the transmission enabling section 19 "supplies a transmission enable signal to the transmitter modules 12-1 to 12-3 in response to the reception end signal." (CISCO-1005, 6:47-52.)

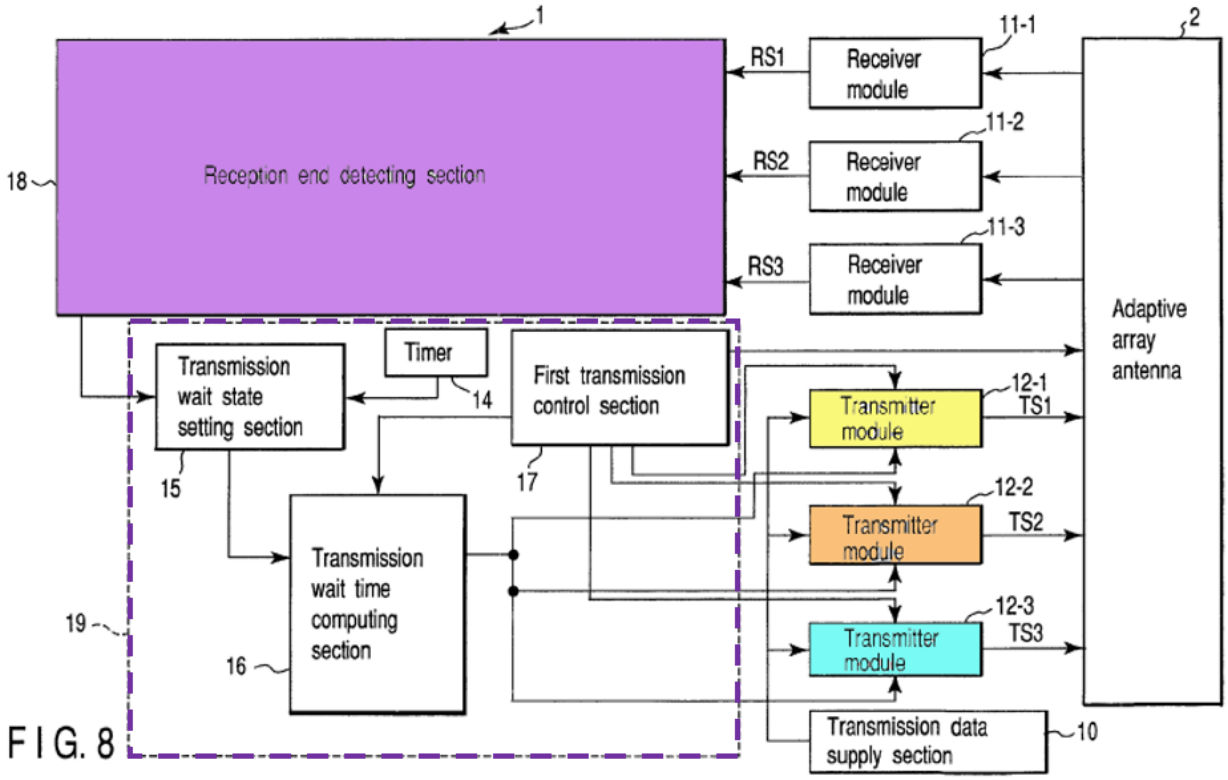


FIG. 8

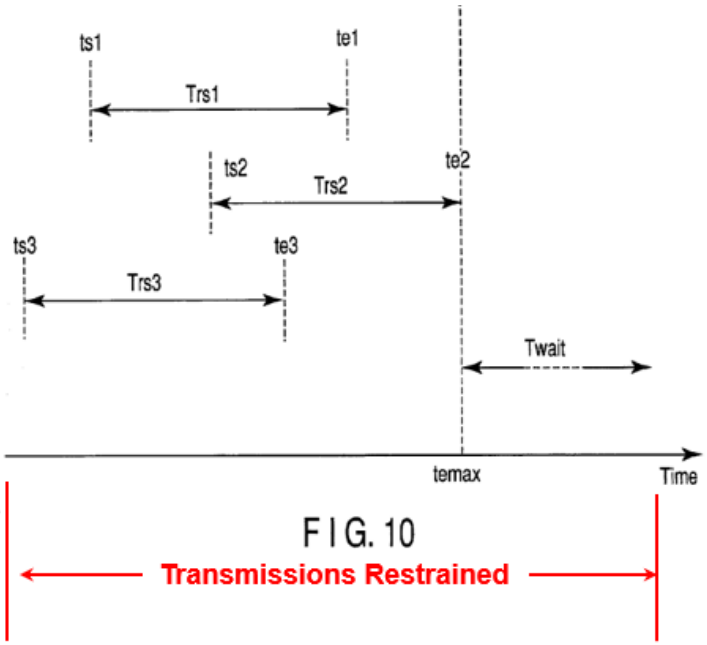
Kasami, Annotated Figure 8

Specifically, the maximum reception end time calculated in the reception

enabling section 18 is provided to the transmission waiting state setting section 15 of the transmission enabling section 19. (*See* CISCO-1005, 12:20-24.) When the maximum reception end time detected by the detecting section 14 "matches the current time clocked by the time 14, the reception waiting state is set by the setting section 15." (CISCO-1005, 12:25-29.) Wait state setting section 15 "sets a flag, i.e., a start flag for computing a time period in which transmission is waited, at a computing section 16 for computing a time period at which transmission is waited." (CISCO-1005, 10:39-42.)

When packet data exists to be transmitted, the transmission control section 17 specifies "at least one transmitter module for transmitting the packet data from among the transmitter modules 12-1 to 12-3" and "sets a flag, i.e., an enable flag for enabling computation of the transmission wait time, at the computing section 16" as mentioned above. (CISCO-1005, 10:46-59.) The computing section 16 then "computes a random transmission wait time." (CISCO-1005, 12:30-31.) When the transmission wait time period has elapsed, "a transmission instruction is provided from the computing section 16 to a transmitter module to which data is to be transmitted." (CISCO-1005, 12:31-33.) Kasami's transmitter modules 12-1 to 12-3 and computing section 16 are therefore "controlled by a first transmission control section 17." (CISCO-1005, 10:42-45.) Figure 10, reproduced below, illustrates that transmissions are restrained for the duration of reception at the "*apparatus*" and for

the additional transmission wait period. (CISCO-1003, ¶118.)



Kasami, Annotated Figure 10

The exemplary operation of the receiving and transmitting procedure illustrated in Figure 3 further confirms that Kasami's "*apparatus*" restrains transmission of signals responsive to ascertaining signals are being received. As illustrated below, after the transmitter module 12-1 transmits a packet to wireless station 4-1, Kasami's wireless communication apparatus (access point 1) is "switched to reception mode." (CISCO-1005, 7:14-17.) At step S11 (shaded blue), "the receiver module 11-1 is prepared to receive ACK signal from the station 4-1." (CISCO-1005, 7:18-19.) In reception mode, "transmitter modules 12-1 to 12-3 are maintained in the **transmission disable state**." (CISCO-1005, 7:19-21.) That is,

the transmission modules are restrained from transmitting any signal. (CISCO-1003, ¶119.) The "*apparatus*" is "maintained in the reception mode" until "it is confirmed to receive ACK signal from the station 4-1." (CISCO-1005, 7:23-27.) Upon receipt of the ACK signal (Step 13 shaded green), "transmission enabling section 19 set[s] the transmitter modules 12-1, 12-2, 12-3 in the transmission enabling state." (CISCO-1005, 7:27-30.) Transmission data are then "transmitted from the transmitter modules 12-2, 12-3 to the station 4-2, 4-3 at the same time, after elapse of the waiting time, as shown in step S14." (CISCO-1005, 7:30-33.)

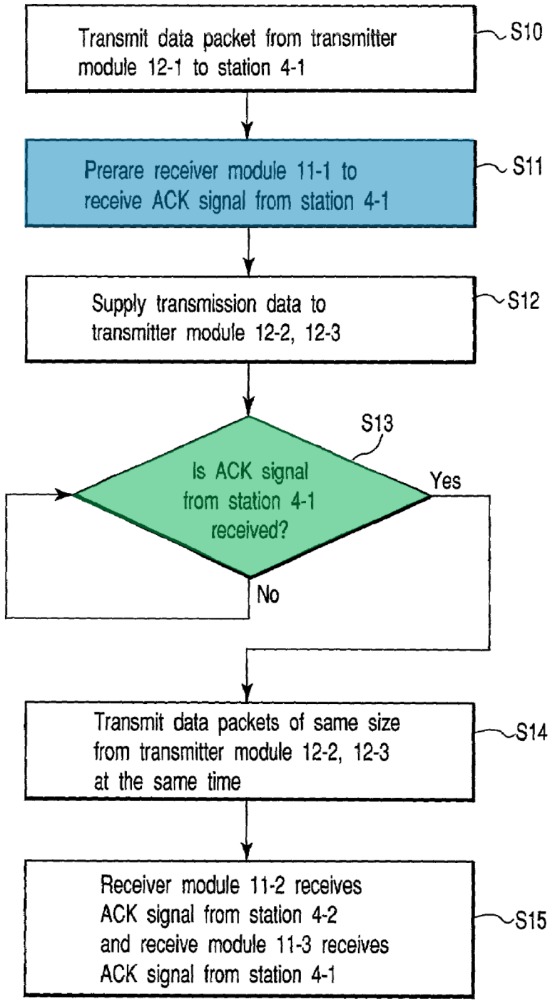


FIG. 3

CLAIM 15 - "*RESTRAINING*" FUNCTIONS

Claim 15 specifically recites that "*the signal transmission/reception coordination logic adapted to restrain at least a third access point of the plurality of access points from transmitting a third signal on a third channel responsive to the ascertaining that the first access point is receiving the first signal and that the second access point is receiving the second signal that is ongoing-on the second channel*" [15B.2]. (CISCO-1003, ¶¶115-122.) Kasami discloses this "*restraining*"

function.

As discussed in Section V.B.2.b, receiver 11-1, transmitter 12-1, and the associated coverage area (shaded yellow in Figures 1-2, 8, and 9 above) are part of a first "*access point*"; receiver 11-2, transmitter 12-2, and the associated coverage area (shaded orange in Figures 1-2, 8, and 9 above) are part of a second "*access point*"; and receiver 11-3, transmitter 12-3, and the associated coverage area (shaded blue in Figures 1-2, 8 and 9 above) are part of a third "*access point*." Each "*access point*" communicates with one or more mobile devices (stations) using a communication "*channel*." (CISCO-1003, ¶120; *see also*, ¶¶106-110, 39-44, 59-62.) Thus, the "*third access point*" of Kasami transmits signals on a "*channel*." (CISCO-1003, ¶120.)

Like the "*ascertaining*" function, claim 15 does not require that the transmission "*channel*" used by the "*third access point*" be different than the reception "*channel[s]*" used by the "*first access point*" and "*second access point*." That is, the "*channel*" used by each or a subset of the "*access point*" may be the same frequency, code, time (or combination thereof) channel. (CISCO-1003, ¶121.) Regardless, Kasami teaches or at least suggests to a POSITA that the channel used by the "*third access point*" is different (e.g., different frequency, code, and/or time channel) than the channel used by the "*first access point*" and "*second access point*", for the reasons discussed in the "*ascertaining*" analysis for

claim 15. (*See, e.g.,* CISCO-1005, 1:14-17, 5:63-66, 25:62-26:2, claims 4 and 14, CISCO-1003, ¶121, *see also*, ¶¶106-110, 39-44, 59-62.) Additionally, each "*access point*" uses a different directed beam and therefore uses a different "spatial channel." (CISCO-1003, ¶¶121, 44.)

Kasami ascertains that a receiver module is receiving a signal while receipt of that signal is "*ongoing*" and also ascertains that a receiver module is receiving a signal while receipt of signals by other receiver modules is "*ongoing*" as discussed in Section V.B.3.b.i ("*ascertaining*" function of claim 15). Kasami's "*signal transmission/reception coordination logic*" restrains all its transmission modules (e.g., restrains the first, second, and third "*access points*") from transmitting based on the indication that a receiver module (e.g., the "*first access point*") is receiving a signal and the indication that another receiver module (e.g., the "*second access point*") is receiving a signal as discussed in detail above. (CISCO-1003, ¶122, *see also*, ¶¶115-119.)

Kasami therefore teaches or at least suggests "*the signal transmission/reception coordination logic adapted to restrain at least a third access point of the plurality of access points from transmitting a third signal on a third channel responsive to the ascertaining that the first access point is receiving the first signal and that the second access point is receiving the second signal that is ongoing-on the second channel*" [15B.2]. (CISCO-1003, ¶¶115-122; *see*

also, '939 patent, 6:1-5 (listing "limiting, preventing, delaying, etc." as examples of "restraining").)

CLAIM 30 - "*RETRAINING*" FUNCTION

Kasami teaches or suggests "*signal transmission/reception coordination logic that is adapted to restrain at least a second access point of the plurality of access points from transmitting a second signal on a second channel different from the first channel responsive to the ascertaining that the first access point is receiving the first signal*" [30B.2]. (CISCO-1003, ¶¶133-141.)

As discussed in Section V.B.2.b, receiver 11-1, transmitter 12-1, and the associated coverage area (shaded yellow in Figures 1-2, 8, and 9 above) are part of a first "*access point*"; receiver 11-2, transmitter 12-2, and the associated coverage area (shaded orange in Figures 1-2, 8, and 9 above) are part of a second "*access point*"; and receiver 11-3, transmitter 12-3, and the associated coverage area (shaded blue in Figures 1-2, 8 and 9 above) are part of a third "*access point*." Each "*access point*" in Kasami communicates with one or more mobile devices (stations) using a communication "*channel*." (CISCO-1003, ¶139; *see also*, ¶¶106-110, 39-44, 59-62.) Thus, the "*second access point*" of Kasami transmits signals on a "*channel*." (CISCO-1003, ¶139.)

Unlike claim 15, claim 30 recites that the "*second channel* [is] *different from the first channel.*" Kasami teaches or at least suggests to a POSITA that the

channel used by the "*second access point*" is different (e.g., different frequency, code, and/or time channel) than the channel used by the "*first access point*", as discussed in the "*ascertaining*" analysis for claim 15. (*See, e.g.,* CISCO-1005, 1:14-17, 5:63-66, 25:62-26:2, claims 4 and 14, CISCO-1003, ¶¶140, *see also*, 106-110, 39-44, 59-62.) Additionally, each "*access point*" uses a different directed beam and therefore uses a different "spatial channel." (CISCO-1003, ¶¶140, 44.)

As discussed above, Kasami discloses "*signal transmission/reception coordination logic*" that restrains all its transmission modules (e.g., restrains the first, second, and third "*access points*") from transmitting based on an indication that a receiver module (e.g., the "*first access point*") is receiving a signal. Thus, Kasami teaches or at least suggests that the "*signal transmission/reception coordination logic … that is adapted to restrain at least a second access point of the plurality of access points* [e.g., transmission module 12-2 associated with the "*second access point*"] *from transmitting a second signal on a second channel* [e.g., a spatial channel, frequency and/or time channel] *different from the first channel responsive to the ascertaining that the first access point* [e.g., receiver module 11-1 associated with "*first access point*"] *is receiving the first signal* [e.g., a different spatial, frequency, and/or time channel]" [30B.2]. (CISCO-1003, ¶¶133-141.)

(iii) Purpose of the "*restraining*"

Claim 15 further recites the purpose or result of the "*restraining*" action—"*the restraining at least the third access point prevents degradation to the first and second signals*." This claim element refers to degradation of received signals (the "*first and second signals*" by a transmitted signal "*third signal*"). (CISCO-1003, ¶123.) To the extent the Board determines this recitation has patentable weight, Kasami discloses this result. (CISCO-1003, ¶¶123-125.)

Kasami recognized that in a device having simultaneous transmission and reception (including SDMA devices like those discussed in the '939 patent and Kasami) "transmission may act as an interference and affect on the reception." (CISCO-1005, 2:13-15.) Kasami also recognized with simultaneous transmission of multiple signals (or simultaneous reception of multiple signals) "where a channel to be used has been an adjacent channel," the "signals of the respective channels interfere with each other, and a data transmission error occurs." (CISCO-1005, 2:49-54.) A POSITA would have understood the "interference" discussed in Kasami "degrades" the signals by introducing errors or by cancelling the signals completely. (CISCO-1003, ¶124.)

As discussed in detail in Ground 1, Kasami discloses a wireless communication apparatus (access point 1) (the recited "*apparatus*") that "communicate[s] with the plurality of stations 4-1 and 4-3 via the substantially

same channel or adjacent channel **while reducing interference between stations.**" (CISCO-1005, 5:63-66.) A POSITA would have understood that the interference caused by simultaneous transmission and reception is eliminated in a system such as Kasami which restrains all transmission during reception intervals. (CISCO-1003, ¶125.) Indeed, Kasami notes that through its technique "good communication" between the "*apparatus*" and wireless stations "can be established without causing interference between transmission and reception." (CISCO-1005, 7:46-49).

Thus, Kasami teaches "*the restraining at least the third access point prevents degradation to the first and second signals*" [15C]. (CISCO-1003, ¶¶123-125.)

C. Dependent Claims

1. Claim 16 and 17

Kasami teaches or renders obvious that "*the prevented degradation to the first and second signals comprises inter-modulation distortion*" [16] and "*the prevented degradation to the first and second signals comprises interference*" [17]. (CISCO-1003, ¶¶142-147.) Kasami discusses a problem in prior art systems that allow for simultaneous transmission and reception. For example, Kasami explains that when "transmission to another station (TE2, TE3) takes place at the same time as the reception, such transmission may act as an interference and affect on the

reception from the station TE1, thus disabling reception." (CISCO-1005, 2:10-15.) A POSITA would have understood that this type of "*interference*" encompasses "*inter-modulation distortion*" which results from spurious combinations of frequency components in the output of a transmission system. (CISCO-1003, ¶¶143-145.) Intermodulation distortion is an issue in wireless base station, like the network-based apparatuses disclosed in Kasami and the '939 patent, which include plural transmitters and plurality receivers and having transmitter-receiver pairs that share an antenna for transmission and reception. (CISCO-1003, ¶¶143-145, *citing* CISCO-1015, Hildebrand, 1:20-33.)

As discussed in Section V.B.3.b.iii (15[C]), Kasami discloses a wireless communication apparatus (access point 1) (the recited "*apparatus*") that "communicate[s] with the plurality of stations 4-1 and 4-3 via the substantially same channel or adjacent channel **while reducing interference between stations.**" (CISCO-1005, 5:63-66.) Kasami notes that through its technique "good communication" between the "*apparatus*" and wireless stations "can be established without causing interference between transmission and reception." (Kasami, 7:46-49.) Kasami's technique therefore helps to prevent "*interference*" including "*inter-modulation distortion.*" (CISCO-1003, ¶146.)

Kasami therefore teaches or renders obvious that "*the prevented degradation to the first and second signals comprises inter-modulation distortion*" [16] and "*the*

prevented degradation to the first and second signals comprises interference" [17]. (CISCO-1003, ¶¶142-147.)

2. Claims 18 and 31

Kasami discloses that "*the plurality of access points established by the wireless I/O unit are co-located*" [18]/[31]. (CISCO-1003, ¶¶148-150.) As explained above with respect to the independent claims, Kasami's wireless communication apparatus (access point 1) (the recited "*apparatus*") has a plurality of "*access points*", each including multiple receiver module/transmitter module pairs (shaded yellow, orange and blue in Figure 2 below), established by the "*wireless input/output (I/O) unit.*" Thus, the "*first access point*" (including receiver module 11-1 and transmitter module 12-1), the "*second access point*" (including receiver 11-2 and transmitter module 12-2), and the "*third access point*" (including receiver 11-3 and transmitter module 12-3) are in wireless communication apparatus (access point 1) and are thus co-located. (CISCO-1003, ¶149.)

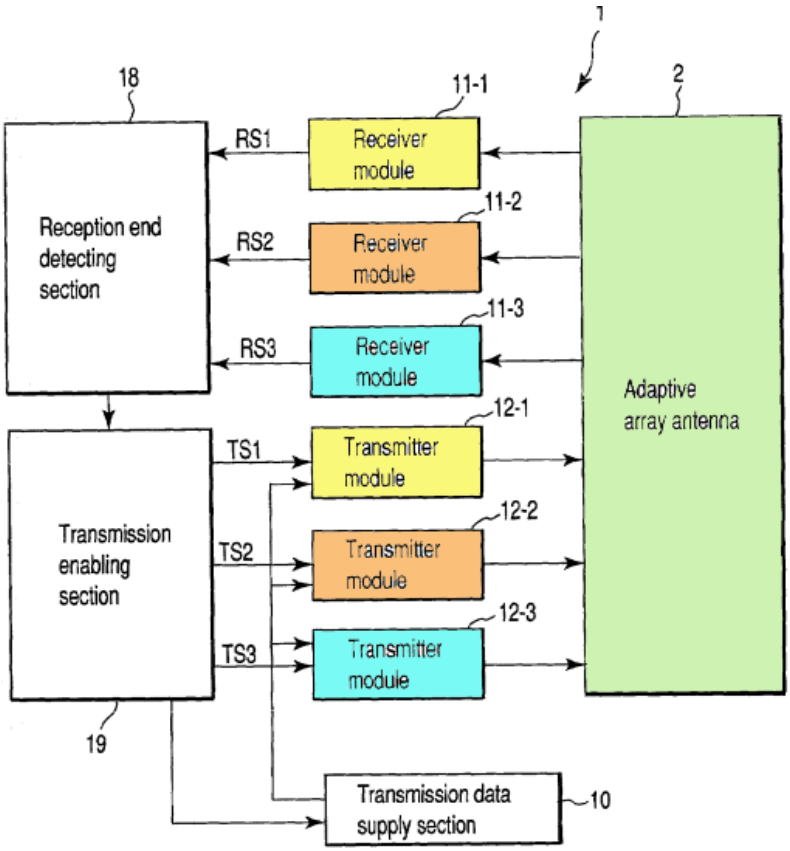


FIG. 2

Kasami, Annotated Figure 2

Kasami therefore discloses that "*the plurality of access points established by the wireless I/O unit are co-located*" [18]/[31]. (CISCO-1003, ¶¶148-150.)

3. Claims 19 and 32

In Kasami, the "wireless LAN system is constructed in conformance with the IEEE802.11 standard (including IEEE802.11a, IEEE802.11b)." (CISCO-1005, 5:53-55.) The wireless LAN system includes the wireless communication apparatus (access point 1), as shown in Figure 1 below. (*See* CISCO-1005, 5:50-

53.) Thus, the components of Kasami's apparatus including the "*wireless I/O unit operate[] in accordance with at least one IEEE 802.11 standard*" [19]/[32]. (CISCO-1003, ¶¶151-152.)

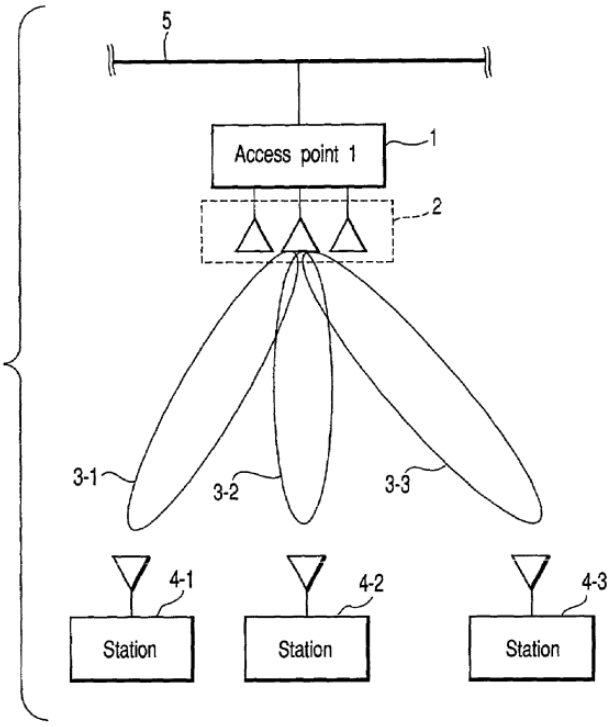


FIG. 1

4. Uplinked Packet Claims 20-22 and 33-35

Dependent claims 20-22 and 33-35 are directed to "*uplinked packet[s]*." Kasami renders these claims obvious as set forth below.

In Kasami, "reception signals carried by the antenna beams 3-1 to 3-3 oriented to these stations 4-1 to 4-3 are received at the receiver modules 11-1 to 11-3." (CISCO-1005, 6:24-26.) The communication link from a mobile device (e.g., station 4-1) to an "*access point*" in the wireless communication apparatus

(access point 1) (the recited "*apparatus*") is an "*uplink.*" (CISCO-1003, ¶154.)

Kasami's "wireless LAN system is constructed in conformance with the IEEE802.11 standard (including IEEE802.11a, IEEE802.11b)." (CISCO-1005, 5:53-55.) A POSITA would have understood that in a LAN communication in both the uplink (mobile device to wireless communication apparatus) and the downlink (wireless communication apparatus to the mobile device) is via data packets. (CISCO-1003, ¶155.) Kasami confirms this understanding, teaching that the "reception signal inputted into the receiver modules 11-1 to 11-3 each includes a data packet, and this data packet has a data structure as shown in FIG. 6 as an example." (Kasami, 9:42-44.) Kasami therefore discloses that "*the signal received by the access point comprises at least one uplinked packet*" [20]/[33] and "*the signal received by the access point comprises at least a portion of an uplinked packet*" [21]/[34]. (CISCO-1003, ¶¶154-155.)

The '939 patent does not mention, let alone describe the "*preamble*" of a data packet. A POSITA however would have understood that Kasami's 802.11 packet included a "*preamble.*" (CISCO-1003, ¶¶156-158.) First, the physical layers defined for use in the 802.11 standard each adds a preamble to the data frame being transmitted. (*See* CISCO-1003, ¶¶157, 50-56, *citing* CISCO-1006 (802.11 Wireless Networks), pp. 9, 152, 172, 173, 185, 186, 190, 191, 209.) Although the prior art uses the term "frame," a POSITA would have understood that the term

"frame" and "packet" were (and are still) often used interchangeably. (CISCO-1003, ¶157.) Kasami therefore teaches or at least suggests "*the at least a portion of the uplinked packet comprises at least part of a preamble of the uplinked packet*" [22]/[35]. (CISCO-1003, ¶¶154, 156-158.)

VI. The Board Should Reach the Merits of This Petition

The Board should reach the overwhelmingly strong merits of this petition. Because of the early stage of the litigation and uncertainty regarding the trial date for the case involving Petitioner, it is not possible to fully address the *Apple v. Fintiv* factors at this time.[7] However, if Patent Owner seeks *Fintiv*-based discretionary denial in its preliminary response, the current evidence weights strongly against the Board exercising its discretionary denial authority.

Petitioner presents a strong case of unpatentability of the challenged claims. As detailed in this Petition, the allegedly patentable feature of the claims—restricting transmission of a signal while a base station or access point is receiving a signal was a well-known technique in wireless communications networks prior to the earliest possible priority date of the '939 patent. Petitioner acted diligently, filing this petition within one month after Patent Owner narrowed

[7] Petitioner reserves the right to request a Reply should Patent Owner seek *Fintiv*-based discretionary denial in its Patent Owner Preliminary Response.

the set of asserted claims in the co-pending district court litigation. *Fintiv* factor 6 weighs heavily against the Board exercising its authority.

The uncertainty of trial date also weighs against the Board exercising its authority (factor 2). While the WDTX has set jury selection for June 23, 2023 (CISCO-1016, p. 6), this date was entered in all **nine** pending cases brought by Patent Owner in that district, which are each to be tried separately. The case against Petitioner is the fourth filed case that is still pending. The Court has not set a specific trial date for the case involving Petitioner. Therefore, *Fintiv* factor 2 weighs against the Board exercising its discretionary denial authority. *See Huawei Techs. Co., Ltd. V. WSOU Investments, LLC*, IPR2021-00229, Paper 10 (PTAB July 1, 2021) (finding absence of a trial date for a defendant in a set of 12 parallel cases to be tried separately rendered factor 2 neutral).

Additionally, the district court litigation is in its early stages. Claim construction briefing has just started and opening fact discovery is still months away. Expert reports will not be exchanged for several months after the projected date for institution. Based on the present facts, *Fintiv* factor 3 is at least neutral, if not weighing against the Board exercising its discretion.

Given the early stage of the litigation, the extent of overlap between this petition and the trial is unknown, rendering factor 4 at least neutral. A stay has not been requested in the co-pending litigation, rendering factor 1 neutral as well.

VII. Mandatory Notices Under 37 C.F.R. § 42.8(B)

A. Real Party Interest

Petitioner identifies itself as the real party-in-interest.

B. Related Matters

To the best of Petitioner's knowledge, the '939 patent has been involved in the following district court litigations:

XR Communications LLC v. Cisco Systems, Inc., et al, 6-21-cv-00623 (WDTX)

XR Communications LLC v. Netgear, Inc., 8-21-cv-01064 (CDCA)

XR Communications LLC v. Netgear, Inc., 2-21-cv-04942 (CDCA)

XR Communications LLC v. Aruba Networks, LLC 2-21-cv-04912 (CDCA)

XR Communications LLC v. Ruckus Wireless, Inc. LLC, 3-21-cv-04679 (NDCA)

C. Notice of Counsel and Service Information

Pursuant to 37 C.F.R. §§ 42.8(b)(3), 42.8(b)(4) and 42.10(a), Petitioner appoints **Lori A. Gordon** (Reg. No. 50,633) at the address of Perkins Coie LLP, 700 Thirteenth Street, N.W., Suite 800, Washington, DC 2005-3960, phone number 202-654-6200, as its lead counsel, and **Ryan McBrayer** (Reg. No. 54,299) at the address of Perkins Coie LLP, 1201 Third Avenue, Suite 4900, Seattle, WA 98101-3099, phone number 206-359-3073 as its back-up counsel.

Petitioner consents to electronic service by email at the email addresses: lorigordon@perkinscoie.com and RMcBrayer@perkinscoie.com.

VIII. Conclusion

For the ground specified above, *Inter Partes* Review of the challenged claims is respectfully requested

Respectfully submitted,

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Date: May 4, 2022

LISTING OF INDEPENDENT CLAIMS

Independent Claim 15

[15P] An apparatus comprising:

[15A] a wireless input/output (I/O) unit that is configured to establish a plurality of access points; and

[15B.1] signal transmission/reception coordination logic that is capable of ascertaining, by monitoring the plurality of access points for received signals,

[15B.1a] a first access point of the plurality of access points is receiving a first signal on a first channel,

[15B.1b] a second access point of the plurality of access points is receiving a second signal that is ongoing on a second channel,

[15B.2] the signal transmission/reception coordination logic adapted to restrain at least a third access point of the plurality of access points from transmitting a third signal on a third channel responsive to the ascertaining that the first access point is receiving the first signal and that the second access point is receiving the second signal that is ongoing-on the second channel,

[15C] wherein the restraining at least the third access point prevents degradation to the first and second signals.

Independent Claim 30

[30P] An apparatus comprising:

[30A] a wireless input/output (I/O) unit that is configured to establish a plurality of access points; and

[30B] signal transmission/reception coordination logic

[30B.1] that is capable of ascertaining, by monitoring the plurality of access points for received signals,

[30B.1a] a first access point of the plurality of access points is receiving a first signal on a first channel and

[30B.2] that is adapted to restrain at least a second access point of the plurality of access points from transmitting a second signal on a second channel different from the first channel responsive to the ascertaining that the first access point is receiving the first signal.

CERTIFICATE OF WORD COUNT UNDER 37 CFR §42.24(D)

Pursuant to 37 C.F.R. §42.24(a), Petitioner hereby certifies that portions of the above-captioned Petition for *Inter Partes* Review of U.S. Patent 8,289,939, in accordance with and reliance on the word count provided by the word-processing system used to prepare this Petition, that the number of words in this paper is 9,122. Pursuant to 37 C.F.R. §42.24(a), this word count is in compliance and excludes the table of contents, table of authorities, mandatory notices under §42.8, certificate of service, certificate of word count, appendix of exhibits, and any claim listing. This word count was prepared using Microsoft Word.

Respectfully submitted,

/Lori A. Gordon/

Lori A. Gordon
Reg. No. 50,633

Attorney for Petitioner

Date: May 4, 2022

PERKINS COIE LLP
700 Thirteenth Street, NW, Suite 800
Washington, DC 2005

CERTIFICATE OF SERVICE

The undersigned hereby certifies that true copies of the Petition for *Inter Partes* Review of U.S. Patent No. 8,289,939 and supporting materials (Exhibits 1001-1016 and Power of Attorney) were served via overnight delivery on the Patent Owner at the correspondence address of record as listed on PAIR:

Klein, O'Neill & Singh, LLP
30 Corporate Park, Suite 211
Irvine, CA 92606

A courtesy copy was also sent via electronic mails to Patent Owner's litigation counsel listed below:

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Date: May 4, 2022